DOCUMENT RESUME

ED 076 246 PS 006 454

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TITLE	[Field Independence-Dependence, Reflection-Impulsivity, and Problem-Solving Styles of Preschool Children.] Interim Report.
INSTITUTION	California Univ., Los Angeles. Early Childhood Research Center.
SPONS AGENCY	Office of Economic Opportunity, Washington, D.C.
REPORT NO	OEO-CG-9938
PUB DATE	72
NOTE	5p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Cognitive Processes; *Conceptual Tempo; Overt Response; Perceptual Development; Preschool Children; Preschool Education; *Problem Solving; *Sex Differences; Technical Reports; *Verbal Communication
IDENTIFIERS	Draw A Person Test; Embedded Figures Test; Field Independence Dependence; Matching Familiar Figures Test; Rod and Frame

ABSTRACT

Two Masters' theses, by Andrea Weiss and Melinda Welles, pursuing related questions were synthesized into a final report, "Field Independence-Dependence, Reflection-Impulsivity, and Problem-Solving Styles of Preschool Children," of which this interim report is a summary. The major purposes of both investigations were to determine: (1) whether individual differences in mode of perceptual organization and conceptual tempo are identifiable in preschool children using the instruments employed; and (2) if individual differences on these dimensions relate to problem-solving styles. Consistency of the field independence dependence continuum across the Rod and Frame, Embedded Figures Test, and Draw-A Person body articulation was discouraging, as few children met field independence dependence criteria for all three measures. Girls and field dependent subjects tended to be more "outerdirected" than did boys and field independent subjects in their approach to the task. Girls were consistently more verbal than were boys on problem-solving tasks, sex differences reaching statistical significance for the WISC Puzzle Game. These verbal patterns can be interpreted as problem-solving strategies or as a function of the task itself. Findings may provide insights to assessment and evaluation of individual children in school. A recommendation is reiterated that instructional systems and curriculum planning be designed to accommodate varying problem-solving styles. (KM)

ED 076246

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INTERIM REPORT

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1972

PS 006454

This research has been carried out through the partial support of the UCLA Early Childhood Research Center, Dr. Carolyn Stern, Director, under grant #CG 9938, from the U.S. Office of Economic Opportunity.

Under the direction of Professor Barbara Keogh, two Masters' theses were completed with the support of the Early Childhood Research Center. Andrea Weiss and Melinda Welles worked cooperatively, with the same group of preschool children (23 boys and 23 girls) pursuing related questions. The Weiss thesis was entitled "Performance of preschool girls and boys on measures of field independence-dependence, problem solving style and verbal responsiveness," and that of Welles was "Performance of preschool girls and boys on measures of field-independence-dependence, reflectivity-impulsivity and verbal responsiveness." These two studies were subsequently synthesized into a Final Report by Dr. Keogh: "Field independence-dependence, reflection-impulsivity, and problem-solving styles of preschool children ." The following abstract is based on the Keogh report.

Both investigations had two major purposes. The first was to determine whether individual differences in mode of perceptual organization and conceptual tempo are identifiable in preschool children using the instruments employed; the second was to determine if individual differences on these dimensions relate to problem-solving styles.

Performance of preschool children on the Portable Rod and Frame apparatus demonstrated clearly that individual differences in field-independence-dependence were identifiable, and that boys were more field-independent than were girls. The Rod and Frame apparatus appeared to possess intrinsic interest for young children, and elicited differences in style of field approach in this population. This, in addition to the consistency of the findings with those obtained on older children would seem to justify the use of this apparatus with younger children.

The physical format of the test instruments may provide an explanation for absence of sex differences on the Embedded Figures and Matching Familiar Figure Tests, and for differences in magnitude of relationships between Rod and Frame and Embedded Figures Test performance

of boys and girls. The Rod and Frame Test requires physical manipulation within a three-dimensional field; the Embedded Figures and Matching Figures Test demand perceptual discrimination in a two-dimensional context. It seems reasonable that two- and three-dimensional tasks may not tap the same perceptual dimension, at least for young children. Absence of sex differences on the Draw-A-Person, and lack of relationship between body articulation score and other field-independence-dependence measures might be attributed to subject's age and to unreliability of instruments.

Overall, consistency of the field-independence-dependence continuum across the Rod and Frame, Embedded Figures Test, and Draw-A-Person body articulation was discouraging, as few children met field-independence-dependence criteria for all three measures. Although present data may be interpreted to suggest that styles of field-independence-dependence and reflectivity-impulsivity are identifiable in preschool children, lack of consistency across tasks must be considered from both theoretical and practical points of view.

The second question addressed was whether modes of field organization and conceptual tempo were related to individual differences in children's problem-solving styles. Since there were distinct differences between girls and boys in performance on the Rod and Frame Test, it was plausible that these differences would be evident in problem solving tasks as well. It was hypothesized that girls would be more outer-directed, boys more innerdirected. Subjective support for this hypothesis had been provided by earlier observation of Keogh (1970) and Roth (1970). In the present study it was expected that children who were more dependent on the surrounding field for guidelines in the PRFT would be more dependent of external cues, e.g. would look to the investigator for help in problem solving situations. Findings were in partial support of this hypothesis.

Girls and field dependent subjects tended to be more "outerdirected" than did boys and field independent subjects in their approach to the task. High rates of glancing behavior on the first trial, with accompanying improvement on the second trial, suggest that boys and field independent children utilized certain concrete situational and social cues to solve the problem. No differences in the problem-solving measures were found between reflective and impulsive children. It is important to note that differences in problem solving styles were specific to the kind of problem presented.

Analysis of verbal responsiveness data on the problem solving tasks revealed that girls were consistently more verbal than were boys, sex differences reaching statistical significance for the WISC Puzzle Game. Verbal responsiveness, as measured by the Kohlberg and Zigler model (1967), is seen on a continuum ranging from extreme verbal dependence to extreme verbal independence. Social responses are viewed as the most dependent type of verbalization; the other two categories are ranked somewhere in between. Girls tended to ask more questions in order to solicit a social response from the investigator while boys tended to concentrate either on questions which would bring them task information or egocentric responses which were self-confirming statements. These verbal patterns could be interpreted as problem solving strategies; i.e., some children used the interaction with the investigator to seek more information about the task itself, others seek more social contact with the investigator.

The verbal interaction may also be looked at as a function of the task itself. As previously mentioned, Yando and Zigler (1971) found that "outerdirectedness" increased as the task became more difficult and/or ambiguous. In the present study, verbal responses for the total group were more frequent in the WISC Puzzle Game and less frequent in the Cancellation Task. Differences in verbal responses were most pronounced in the WISC Puzzle Game.

Implications. Findings of this study may provide insights in assessment and evaluation of individual children in school settings. Rather than exclusive reliance on quantitative, standardized test results, the psychometrist may interpret a child's approach to the test and may consider various information seeking strategies employed. Girls in the present study were more field dependent than boys, and were also markedly different from boys in problem solving styles. Field independence-dependence may well reflect a generalized approach to interaction with the environment, including problem solving as posited by the Witkin group (Witkin, et al., 1962).

As suggested by Keogh (1971), instructional systems and curriculum planning may be designed to accommodate varying problem-solving styles. Turnure (1970) proposed a fresh conception of children's attentive behavior. "Rather than viewing a child's glances away from a task as inevitably indicative of inattentiveness, we might consider that they are natural and spontaneous instances of 'looking for help.' Many of the occasions on which the pupil isn't paying attention to his lesson, situations which are usually considered the nadir of educational opportunity, may in fact be the optimum moments to teach." In sum, consideration of individual differences in children's behavior as reflection of individual differences in information seeking and information processing may well provide a basis for a more optimal match between child characteristics and institutional systems.

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